

Semi-Volatile Organic Pollutants in Snow from National Parks of the Pacific Northwest

Kimberly Hageman, Oregon State University
Donald Campbell, United States Geological Survey
Glenn Wilson, Dave Schmedding, Sascha Usenko,
Staci Simonich, Oregon State University*

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Pesticides, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs) are potential biological stressors. These pollutants are semi-volatile organic compounds (SOCs), which are capable of undergoing atmospheric transport from source locations to remote sites. In the mountainous regions of the Pacific Northwest, temperatures are sufficiently low to induce atmospheric deposition of SOCs via wet or dry deposition. The project described herein was initiated by the United States National Park Service to determine if SOCs are accumulating in national parks via short- and/or long-range atmospheric transport. Parks located in the Pacific Northwest that are included in this project are Olympic, Mount Rainier, and Glacier. While SOCs are being quantified in a number of interconnected ecosystem components at each park, this presentation will focus on SOCs in snow, which is a likely source of SOCs to high-elevation sites. Annual snowpack samples (~50 kg) were collected at two lake catchments in each park in 2003 and 2004. SOCs were extracted from melted snow by solid-phase extraction with modified hydrophilic/hydrophobic Speedisks™. Samples were analyzed by gas chromatography with mass spectrometry and quantified against stable-isotope labeled surrogates. SOC concentrations in snow from Pacific Northwest parks will be compared to concentrations found in other western parks.